



Disaster Education and the Role of Geographers: A Step Toward a Disaster Resilient Ambon City: A Review

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Abstract

The alignment of geography concepts in disaster education is an important strategy to build an Ambon City that has high preparedness in facing disaster risks. The integration of geography concepts enables a deeper understanding of geographical factors that influence risk, such as location and topography. This research uses a descriptive Qualitative Method by conducting a literature study. The results show that through disaster education that incorporates aspects of geography, communities can plan appropriate mitigation actions and design disaster-resistant infrastructure. Cross-sector collaboration between the government, private sector, community organizations, and educational institutions is the foundation in dealing with disaster risks in a holistic way. This integrated disaster education builds high awareness of risks and the environment, provides mental and physical preparedness in the face of crisis, and forms a solid foundation for a safer and more resilient future. In the face of disaster threats, integrating geography in disaster education is an important milestone in making Ambon City a city that is ready and resilient in the face of various natural challenges and crises.

Keywords: Ambon, Disaster, Disaster Education, Disaster Resilience, Geography

Introduction

Ambon City is the capital of Maluku Province, where natural disasters often occur (BNPB, 2021). The geographical condition of Ambon City, which is located on the Pacific Ring of Fire and between two large tectonic plates, makes it vulnerable to earthquakes, volcanic eruptions, and even tsunami risks (Rakuasa et al., 2022; Sugandhi et al., 2023). Based on data from the National Agency for Regional Disaster Management in 2023, it explains that Ambon City is an area that has the highest disaster risk in Maluku Province. This is certainly reinforced by previous researchers who explained that Ambon City is very vulnerable to hydrometeorological disasters including floods, landslides, abrasion, tsunamis (Rifai & Rakuasa, 2021; Rakuasa et al., 2022; Rakuasa et al., 2022; Salakory & Rakuasa, 2022;

Manakane et al., 2023; Muin & Rakuasa, 2023; Muin & Rakuasa, 2023). In addition, global climate change may also worsen the situation by increasing the frequency and intensity of disasters such as extreme weather and rising sea levels (Rakuasa, 2022).

In the face of the complexity of disaster threats, it is important to understand that geography plays a crucial role in planning mitigation, response and post-disaster recovery (Kamil et al., 2020). Geography determines disaster-prone locations, the types of disasters that may occur, and the impacts that can be caused (Latue & Rakuasa, 2023). The integration of geography aspects in disaster education is an essential step in building awareness and preparedness of the Ambon community (Rakuasa & Mehdila, 2023). Knowledge of topography, hydrology and river-lake flow patterns is also needed to design effective evacuation plans. A deep understanding of geography will also help in determining safe locations for temporary shelters, mapping evacuation routes and developing post-disaster recovery tactics (Gampell et al., 2020). Without this knowledge, such efforts may not be efficient or may even endanger more lives.

In addition, learning aspects of geography in the context of disasters can also increase the active participation of communities in formulating disaster policies and urban development planning (Latue et al., 2023). With a better understanding of the threats they face and their impacts, communities will be more involved in decision-making processes related to spatial planning, infrastructure and safer zoning (Muin & Rakuasa, 2023). However, the challenges of integrating geography in disaster education in Ambon City cannot be ignored. Limited resources, lack of qualified teaching staff, and inadequate educational infrastructure are the main obstacles. Therefore, collaboration between local governments, educational institutions and communities is needed to develop relevant curricula, training for educators, and innovative learning approaches that can reach various age groups (Ramadhan et al., 2019).

Based on the above, this research aims to illustrate the importance of integrating geographical aspects in disaster education in Ambon City. In this way, communities can have a deeper insight into the physical environment they live in and how these geographical factors contribute to disaster risk. Through this understanding, it is expected that communities will be better able to plan more effective adaptation and response measures when facing natural disasters. As such, the research seeks to encourage a paradigm shift in the approach to disaster education, from mere general knowledge to a more specific and relevant integration of geographic knowledge in an effort towards a disaster-resilient Ambon City.

Literature Review

Disaster Education is an effort to increase the understanding and awareness of the community and stakeholders about different types of natural and human disasters, as well as how to manage and respond to them. This education aims to minimize disaster risks, protect lives and property, and promote environmental sustainability. In this context, geographers play an important role in the delivery of disaster education. One of the main roles of geographers in disaster education is to conduct spatial analysis and disaster risk mapping (Sugandhi & Rakuasa, 2023). They use geographic data and GIS (Geographic Information System)

technology to identify areas that are vulnerable to certain disasters, such as earthquakes, floods or volcanic eruptions (Rakuasa & Latue, 2023). With an understanding of geographic and geological patterns, geographers can assist governments and humanitarian organizations in determining safe locations for settlements, infrastructure and economic activities (Manakane, et al., 2023).

In addition, geographers also play a role in developing disaster mitigation strategies. They can provide input on how to build earthquake- or flood-resistant infrastructure, as well as design effective evacuation plans (Huwae et al., 2023). Geographers also assist in educating the public about disaster threats and actions to take in emergency situations. Finally, geographers also support post-disaster recovery efforts (Manakane et al., 2023). They can assist in the understanding of geographical changes caused by disasters, such as changes in river patterns or landforms (Latue et al., 2023). This is important for long-term planning and recovery of affected areas (Latue et al., 2023). Overall, geographers have an important role to play in disaster education as they bring an understanding of physical and human geography that is highly relevant in disaster mitigation, management and recovery efforts Muin & Rakuasa, 2023). With their contributions, we can better prepare for and respond to disasters more effectively, safeguarding the safety and well-being of people and the environment.

Research Method

This research uses a descriptive Qualitative Method by conducting a literature study related to this research. Literature study is an effective approach in research to collect, observe, analyze, and synthesize relevant information from various existing literature sources (Hermawan, 2019). In the context of the research "Disaster Education and the Role of Geographers: A Step Toward a Disaster Resilient Ambon City" this method provides a solid foundation for exploring knowledge on how geography can contribute to improving disaster preparedness in Ambon City.

Result And Discussion

1. Introduction to Disaster Education and the Role of Geography

Disaster education is an educational approach that aims to improve people's understanding and preparedness in facing various types of natural disasters or other threats (Prakoso et al., 2021). Disaster Education focuses on increasing knowledge, awareness and skills in dealing with, reducing the risk of, and managing the impact of disasters. Through this education, the community is expected to take appropriate action when facing emergency situations, so as to minimize human, environmental and asset losses. Geography plays an important role in disaster education because disasters are often closely related to geographical factors (Octavia, 2018). Geographical contexts such as location, topography, climate and soil type can influence the types of disasters that may occur in an area (Somae et al., 2022). For example, areas near the coastline are prone to tsunamis, while those in mountainous regions are more at risk of landslides or flash floods. By understanding these geographical aspects,

communities can identify potential disaster risks in their vicinity and take appropriate preventive measures.

In addition, an understanding of geographical aspects can also help in disaster mitigation planning. By knowing the river flow patterns, slope and soil characteristics of an area, authorities can design infrastructure that is more resilient to disasters, such as the construction of embankments, dams or early warning systems. Disaster education that integrates geography can also help in developing effective evacuation plans, by considering safe routes and refuge points in higher or safer areas (Hawa et al., 2023). In addition, geography is also related to understanding the natural resources in a region. Disaster education can help communities to use these resources sustainably and intelligently, reduce pressure on the environment and avoid practices that can exacerbate disaster risks, such as uncontrolled logging or development in flood-prone areas (Maryani, 2021). Overall, the integration of geography in Disaster Education is important as it helps people understand the relationship between geographical factors and disaster risk. This knowledge not only improves disaster preparedness, but also supports prevention and mitigation efforts, and promotes awareness of the importance of maintaining a balance between humans and the environment in order to minimize the impact of future disasters (Sharpe & Kelman, 2011).

2. Profile of Ambon City and Disaster Threats Faced

Ambon is the capital city of Maluku Province, Indonesia. As the center of government, trade, and culture in the Maluku region, Ambon has a number of important infrastructures such as ports, airports, and educational facilities. However, Ambon also faces various disaster threats. One of the main threats the city faces is earthquakes (Baskara et al., 2021). Located on the Pacific Ring of Fire, Indonesia often experiences high seismic activity, and Ambon is no exception. Earthquakes have the potential to trigger further disasters such as tsunamis or landslides, given the city's geographical proximity to deep ocean waters (Rohadi et al., 2021).

In addition, Ambon is also prone to flooding (Muin & Rakuasa, 2023b). High rainfall over a period of time can cause river overflows and flooding in low-lying areas. The hilly topography can also worsen the impact of flooding, as heavy water flow can trigger erosion and landslides (Sugandhi et al., 2023). Another threat to watch out for is extreme weather such as tropical storms or cyclones. The Maluku region is included in the traffic lanes of tropical storms, which can cause serious damage to infrastructure and damage the environment. In addition to natural threats, Ambon has also experienced social conflicts that resulted in instability and a deep psychological impact on the community. Although not natural disasters in the traditional sense, these conflicts must also be considered due to their impact on the security and well-being of citizens. In the face of these threats, the Ambon City Government and its communities need to jointly develop effective disaster mitigation strategies, including disaster education, earthquake- and flood-resistant infrastructure, and adequate early warning systems. With improved risk awareness and preparedness, Ambon can become more resilient in facing the challenges of disasters that may occur in the future.

3. Integrated Disaster Education Approach in Ambon City

The Integrated Disaster Education approach in Ambon City is a strategy that combines various elements of education, community participation, and cross-sector cooperation to improve preparedness and resilience in facing disaster risks. One of the main aspects of this approach is formal education in schools, where a specialized curriculum on disasters and their mitigation can be implemented (Suarmika & Utama, 2017). In this learning, students not only

understand disaster theory, but also engage in evacuation drills and emergency response actions (Suhardjo, 2015). In addition to formal education, the integrated approach also includes non-formal education through educational campaigns in the community. Workshops, seminars and workshops can be organized to improve people's understanding of disaster risks and the steps that can be taken to deal with them. Social media and other communication channels are also utilized to disseminate accurate and useful disaster information.

Community participation is key in this approach. Involving residents in formulating disaster mitigation plans and identifying hotspots in their area can increase the effectiveness of emergency response efforts (Setyaningrum & Sukma, 2020). Through community groups, such as disaster volunteers or preparedness committees, citizens can play an active role in monitoring the situation and responding quickly when a disaster occurs. This approach also includes integration with other sectors, such as health, infrastructure and the economy. Cross-sector cooperation enables the development of disaster-resistant infrastructure, risk-safe spatial planning, and business plans that can continue operations in emergency situations (Hawa et al., 2023). In this case, the government, private sector, and community organizations must work together in carrying out their respective duties and responsibilities.

An integrated approach also includes a sustainable approach. Disaster education is not a one-off process, but an ongoing effort that is continually updated and improved. Changes in environmental conditions, social situations and disaster threats require adaptation and updating of information and strategies (Oktavia, 2018). Overall, the Integrated Disaster Education Approach in Ambon City includes various components, such as formal and non-formal education, community participation, and cross-sectoral cooperation. By combining these elements, the city can build a community that is more aware of disaster risks, better prepared to deal with them, and has the ability to respond quickly and effectively when disasters occur.

4. Integrated Disaster Education Approach in Ambon City

Disaster Education integrates various geography theories and concepts to understand and address disaster risk (Torani et al., 2019). One relevant theory is the concept of "location" in geography, which helps identify areas vulnerable to disasters based on geographic factors such as topography, distance from the coast, or depth of groundwater (Galvani et al., 2016). This theory helps in planning mitigation measures that match the characteristics of each location. The concept of "human-environment interaction" is also important in disaster education (Galvani et al., 2016). This theory emphasizes how human activities can affect the environment and vice versa. Understanding how humans utilize natural resources and build infrastructure can help in identifying practices that may increase disaster risk or, conversely, reduce its impact (Lam et al., 2022).

Spatial theory or spatial aspects of geography are also relevant in disaster education (Shi et al., 2020). The use of maps and spatial analysis helps to illustrate the distribution of disaster risk in a given area. This spatial information is important in planning evacuation routes, determining shelter locations and directing relief efforts in emergency situations (Parker, 2020). The aspect of geography that highlights "temporal change" is also applied in disaster education. This involves understanding how the environment and disaster risk can change over time, both due to natural factors and human activities. For example, increased urbanization or climate change can affect disaster risk patterns, and this understanding is important in planning adaptation measures.

Spatial theory helps in understanding the interactions and dependencies between neighboring regions (Shi et al., 2020). In the context of disaster education, this theory can aid in the coordination of emergency response across regions, mutual aid between communities,

and an understanding of how disasters in one region can impact another (Orimoloye et al., 2021). Finally, the concept of scale, geography is also relevant. It relates to recognizing disaster risk at local, regional and global scales. Understanding how events in one place can affect other areas or how local solutions can have a wider impact is important in designing holistic and sustainable disaster education strategies (Parker, 2020).

5. Case Study: Implementation in Practice in Ambon City

The implementation of geography concepts in disaster education in Ambon City can be illustrated through case studies that combine geography theory with concrete actions in addressing disaster risks. For example, by applying the concept of location, the Ambon City government can identify areas prone to disasters such as floods or landslides based on topographical factors and distance from rivers. This enables the development of spatial planning that avoids development in high-risk areas. Through the concept of "human-environment interaction," the government can design educational campaigns to educate the community on practices that are environmentally friendly and contribute to disaster mitigation. For example, educating the public on the importance of maintaining river flows and keeping garbage out of waterways to reduce the risk of flooding.

The utilization of spatial concepts can also be seen in the implementation of evacuation route planning and shelter location determination (Rakuasa et al., 2022). By utilizing mapping technology, the government can identify optimal evacuation routes and safe locations for residents when a disaster occurs. The aspect of "temporal change" plays a role in the development of long-term mitigation plans. The Ambon City government can take action to reduce the risk of disasters due to climate change by incorporating adaptation strategies in development plans, such as the development of disaster-resistant infrastructure and the reduction of greenhouse gas emissions.

In applying the concept of spatiality, the government can work with communities in surrounding areas to build collective awareness and coordinate emergency response efforts across regions (Sopacua & Salakay, 2020). This collaboration can increase effectiveness in dealing with disasters and optimize available resources. Finally, through the concept of scale, the Ambon City government can work together with national and international institutions to share information and lessons learned from their experiences in addressing disaster risks. This can strengthen Ambon City's capacity to face greater challenges and support comprehensive disaster management efforts at a broader level.

6. Building Community Awareness and Cross-Sector Cooperation

Building community awareness is a crucial step in dealing with disaster risk in Ambon City. In this context, disaster education plays a central role in improving people's understanding of the threats and how to deal with them. Through educational campaigns involving schools, communities and local media, communities can be given a better understanding of the risks and actions that can be taken in emergency situations (Istiqomah, 2019). High awareness can also be increased through involving communities in various emergency response simulations and drills (Pakniyany et al., 2022). By experiencing first-hand how to deal with disasters in a safe environment, communities can develop confidence and mental readiness in dealing with real emergency situations.

Cross-sector cooperation is key in effectively addressing disaster risk (Sari et al., 2020). The government, humanitarian agencies, non-governmental organizations and the private

sector need to work together to coordinate mitigation, emergency response and recovery efforts. Cross-sector forums can be a forum for various parties to share knowledge, resources and experiences in dealing with disasters (Asteria, 2016). The role of the private sector is also very important in this cooperation. With support from local companies, advanced technologies such as early warning systems and earthquake-resistant infrastructure can be more easily implemented. In addition, the private sector can contribute through corporate social responsibility programs, such as emergency response training for employees and support in post-disaster recovery efforts.

Cross-sector cooperation also means involving active participation from the government in developing policies that support mitigation and emergency response efforts (Asteria, 2016). Government involvement in facilitating training, designing regulations that prioritize safety factors, and providing incentives for mitigation efforts are important steps in building a comprehensive disaster response force. Overall, building community awareness and cross-sectoral cooperation are the two main pillars in dealing with disaster risk in Ambon City. Through education, community engagement, and coordination and synergy between various parties, the city can become more resilient in facing disaster challenges and protecting the welfare of its citizens.

7. A Disaster Resilient Future for Ambon City

A disaster-resilient future for Ambon City involves vision and sustained efforts in addressing disaster risks. First of all, the government and community must continue and strengthen disaster education programs, both at the school level and through community education campaigns. With a deeper understanding of risk and emergency preparedness, citizens will be better prepared to face disaster threats. The development of disaster-resistant infrastructure is an essential step in creating a resilient future. The construction of housing, roads, bridges and public facilities must consider disaster risk factors. For example, implementing earthquake-resistant building designs and good drainage to reduce the risk of flooding.

Cross-sectoral cooperation must continue to be enhanced. The involvement of the private sector, government agencies, community organizations and international institutions is important in ensuring continued support, resources and expertise that can be utilized in mitigation and emergency response efforts. Technology also plays a key role in creating a disaster-resilient future. The development of more sophisticated and accurate early warning systems, as well as the utilization of technology in evacuation simulations and drills, can strengthen community preparedness. Capacity building of local communities is another important aspect. Through the establishment of disaster volunteer teams and preparedness committees, communities can have an active role in responding to disasters. Training on first aid, evacuation and disaster management can provide citizens with the necessary skills in emergency situations. Finally, the vision of a disaster-resilient future should be integrated in all aspects of city development. From spatial planning to economic development, the safety aspect of disaster risk should be a major factor considered. By doing so, Ambon City can achieve greater sustainability and become a model for other cities in facing future disaster challenges.

Conclusion

Integrating geography concepts in disaster education is an important step in realizing a disaster-resilient Ambon City. Geography concepts provide a deeper understanding of geographical factors that affect disaster risk, such as location, topography and human-environment interaction. By integrating geography knowledge in disaster education, the people of Ambon City can better understand the existing threats and plan appropriate mitigation actions. Geography-integrated disaster education enables the government and community to plan disaster-resistant infrastructure, identify vulnerable areas, and design effective evacuation routes. This approach also helps build awareness of the surrounding environment and promotes sustainable practices to reduce the impact of disasters. In dealing with disaster risk, cross-sector collaboration is also a key factor. Involving the government, private sector, community organizations and educational institutions in disaster education efforts will create a holistic ecosystem in addressing disaster risks. The importance of disaster education integrated with geography concepts is not only for emergency situations when disasters occur, but also to build a strong foundation for a safer future. With high knowledge and awareness of disaster risks, Ambon City can create a society that is ready and able to face various natural threats and crisis situations. Integrating geography in disaster education is not just a task for the government, but also a commitment for the entire community. By involving education in schools, educational campaigns, community participation, and cross-sector cooperation, Ambon City can move towards a disaster-resilient future, where people have adequate knowledge, skills, and preparedness in facing any disaster challenges that may arise.

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